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Exploring the Sources of Collective Effervescence: A Multilevel Study

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Abstract: Collective effervescence is assigned a key role in sociological theorizing on ritual and group processes, yet surprisingly little research has systematically measured the phenomenon and examined its sources. In addressing this research gap, the current article explores and compares several correlates of collective effervescence. The data included questionnaires and geospatial records of spatial setting and movement patterns recorded at a large music festival. Multilevel regression modeling was applied, and the strength of the estimated evidence was assessed with frequentist and Bayesian approaches. Results suggest that collective effervescence is a highly spatially clustered phenomenon that, in particular, is associated with the social-morphological feature of being in a crowd of people. The article discusses the implications of these results for sociological Durkheim scholarship as well as for festival-event studies.

Keywords: Émile Durkheim; collective effervescence; Interaction Ritual Theory; multilevel regression

A key argument of the sociological study of micro-interaction is that social emotions are the “glue” of solidarity and the “energy” mobilizing change and conflict (Collins 2004; Turner 2010). An early and now classic attempt to theorize these complementary emotional processes is Durkheim’s ([1912] 1995) concept of “collective effervescence,” describing how the affective arousal of an assembled crowd creates the potential for both social conformity and group-based agency (Pickering 1984; Swann et al. 2012). Given the prominent status of the concept within the tradition, there is a surprising dearth of systematic empirical observations of collective effervescence (Buehler 2012), particularly with respect to locating the potential sources of this phenomenon (Kearney 2018). This may reflect the prevalence of armchair scholarship and a focus on interpretive epistemologies as opposed to an objectivist and quantitative examination of cause–effect relationships. The dominance of an interpretative approach within this field of study, it should be noted, runs counter to Durkheim (1982) and Collins’s (1983, 1989) positivist ambition that collective emotions should be measured and explained.

The purpose of the current article is to statistically examine and contrast a number of plausible sources of collective effervescence. For this inquiry, it is initially helpful to distinguish between the overall types of mechanisms that may influence a group of individuals to act, feel, or think in a similar manner. This may be ascribed to how the group participants interact, who they are, or where the group is located—that is, interactional, compositional, and environmental factors, respectively (Hedström 2005). Traditionally, it is assumed that collective effervescence is an emergent property of focused face-to-face interactions, and the alternative environmental and compositional accounts are accordingly attributed less explanatory weight. However, given the lack of research on the underpinnings

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
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of collective effervescence, it remains empirically uncertain whether this focus is justified, and the current article is a step toward examining this question.

In reviewing the existing research on collective effervescence, the article devotes particular attention to Collins's (2004) Interaction Ritual (IR) Theory, which arguably is the most advanced explanatory account of collective effervescence to date (von Scheve 2011). Broadly speaking, IR theory may be described as a formalized synthesis of Durkheim's (1995) sociology of religion and Goffman's (1967) situational micro-sociology. The ambitious claim of the theory is that *any* social phenomenon—from micro-interactional encounters to macro-historical trends—can ultimately be accounted for in terms of interaction ritual chains, comprising just a few ingredients (Collins 1981, 2004). These ingredients include a number of copresent individuals, physically gathered in a demarcated place, sharing a common mood and focus of attention. These variables are further reinforced through bodily processes of rhythmic entrainment by which participants become synchronized with each other's motions and emotions. This leads to an "intensification of shared experience, what Durkheim called collective effervescence, and the formation of collective conscience or collective consciousness" (Collins 2004:35). The subsequent ritual outcomes are the building of emotional energy in the individual combined with the growth of group solidarity, morality, and membership symbols.

From this outline of IR theory, we see that collective effervescence is mainly accounted for in terms of an interactional effect—the underpinning mechanism assumed is an "emotional contagion," by which the interacting participants influence and intensify each other's emotional state (Collins 2004; Heinskou and Liebst 2016). The empirical evidence supporting this interactional explanation is substantial and found across diverse social contexts, including harp singing (Heider and Warner 2010), restorative justice conferences (Rossner 2011), and even online discussion forums (DiMaggio et al. 2018). Adding to this, Collins's assumption regarding rhythmic entrainment as a basis for collective effervescence is neurologically plausible (Heinskou and Liebst 2016) and in line with meta-analytical evidence that interpersonal synchrony increases perceived social bonding and positive affect (Mogan, Fischer, and Bulbulia 2017).

A notable feature of the scholarly tradition theorizing collective effervescence is a dismissal of person-centered, compositional explanations. This is reflected in Durkheim's (1982) antipsychological stance, which prepared the ground for micro-sociological situationalism, as Goffman (1967:2–3) famously summarized: "Not, then, men and their moments. Rather moments and their men." The issues of placing a strong emphasis on the structural aspects of social life are well known (Smith 2015; Wrong 1961). Collins accepts Goffman's Durkheimian situationalism overall, but he also makes concessions to the critics of this position by including compositional elements into IR theory (Collins 1993). Specifically, he suggests that individuals tend to select themselves into interactions rituals, which "match up" with their cultural capital and emotional energy. If the person and situation mismatch, "the interaction ritual does not reach a high level of intensity, and the EE [emotional energy] payoff is low. Individuals are motivated to move away from such interactions" (Collins 2004:151). The level of collective effervescence and the corresponding individual experience of emotional energy are accordingly mediated

by who is participating in the ritual. Such a compositional effect is consistent with the homophily principle, which holds that many group similarities, including plausibly emotional moods (Greetham et al. 2015), are a result of individuals associating with similar others (McPherson, Smith-Lovin, and Cook 2001).

Within Durkheimian studies (e.g., Alexander 2005), it is often argued that Durkheim's late sociology of religion signified a break from his earlier view that social life is shaped by environmental features, such as social density and physical space (referred to by Durkheim [1994] as the "social morphology"). This interpretation of Durkheim is questionable, however, given that it neglects the morphological insights found in his late sociology of religion and which subsequently informed Goffman and Collins's micro-sociology (Collins 1994, 2005; Liebst 2016). As such, Collins's (2004:53, 81) argument that human "bodies moving into the same place starts off the ritual process," because there is "minimal excitement of being within a mass of human bodies," is aligned with the Durkheimian morphological view that spatially dense gatherings underpin the emergence of collective effervescence. This further resonates with Goffman's (1963) subsequent notion of "unfocused interaction," whereby it is the social density condition of mere copresence (without the need for direct "focused interaction") that influences the social ritual outcomes. Whether higher social densities facilitate positive emotions—or, alternatively, negative ones—is likely dependent on *where* the density occurs and thus on expectations and the existing emotions of the ritual site (Freedman 1975; Turner 2010).

Adding to the above considerations on the link between social density and collective emotions, some Durkheimian scholars have suggested that physical space may play a role in bringing the ritual gatherings into being. In an early study of the social morphology of the Inuit culture, Mauss ([1906] 1979) suggested that seasonal variation between the dense and dispersed living conditions during winter and summer, respectively, is associated with inverse levels of collective effervescence: "Winter is a season when Eskimo society is highly concentrated and in a state of continual excitement and hyperactivity" (Mauss 1979:76). Note that Mauss's link between social morphology and what would later be coined "collective effervescence" may have been influential for the formulation of the latter concept within the Durkheimian tradition (Pickering 1984). Further, in line with Mauss's argument, Durkheimian scholars have more recently shown that architectural morphological space may promote unequal density patterns of copresence, which in turn creates varying opportunities for micro-interactional encounters (Hillier et al. 1987; Liebst 2016).

Taken together, it is plausible that collective effervescence has several sources: interactional, compositional, and environmental. Besides focused interaction processes, which are common within Durkheimian research, the emotional intensity of rituals may also be shaped by the morphological level of unfocused crowd interaction and by social sorting, whereby individuals partake in interaction rituals that match their cultural capital and emotional energy.

Methods

Data included a survey of randomly selected festival-goers attending Northern Europe's largest music festival, the Roskilde Festival, in 2011 (replication data and scripts are available as supplemental material at osf.io/eqdgb). The survey was sampled by a team of 11 university students during the five warm-up days of the festival, which precede the scheduled music program. During this period, tens of thousands of visitors build tent camps and engage in extensive drinking and partying activities. As such, the festival offered a "natural laboratory" (Park 1939) to examine the factors underpinning the collective effervescence that prior studies have identified in this (Pedersen 2014) and similar festival contexts (Niekrenz 2014). Specifically, the survey was conducted with face-to-face interviews in the interviewees' tent camps, allowing for a subsequent georeferencing of data. Across 50 tent-camp locations, 505 responses were sampled with a response rate of 96 percent.

Measures

Dependent variable. Collective effervescence was measured as an additive index, with five items capturing the emotionally exalted aspects of dancing, animated movement, and noise-making that may be considered cues of the phenomenon (Collins 2007; see Table 1 for descriptive statistics of measures). Accordingly, the respondents were asked a battery of questions on how they experienced the immediate surroundings of their camps: "My camp is situated in a 'festive,' 'noisy,' 'hectic,' 'boring,' or 'calm' place." The response categories were "agree strongly," "agree," "disagree," and "disagree strongly" (note that the variables regarding boredom and calmness were reverse coded). The internal consistency of the constructed collective effervescence index was assessed to be high, with a Cronbach's alpha value of 0.83. In order to obtain results with a comparable effect-size metric, the index was z-standardized prior to analysis.

Independent variables. The level of *focused interaction* was captured with the following question: "My camp hangs out a lot with neighboring camps," with a four-point Likert scale of the responses "agree strongly," "agree," "disagree," and "disagree strongly." This variable was included as a binary predictor with the two disagreeing responses as the reference category. Further, several predictors were included as measures of compositional features. *Party preference*, indexing the cultural capital and related emotional energy of the respondents, was captured with the following question: "It makes my festival experience greater if my camp is located in an area in which people are partying intensively." The four-point Likert scale responses "agree strongly," "agree," "disagree," and "disagree strongly" were coded into a binary predictor with the two disagreeing responses as the reference. *Gender* (female as the reference) and *age* (measured as an interval) were included in light of earlier research suggesting that these factors may influence how individuals engage in party and drinking events (Wilsnack et al. 2000). Finally, a continuous measure capturing the visitors' *prior attendance* at the festival was included: "How many times have you attended the Roskilde Festival prior to this year?" This variable was included as the visitors' previous attendance may influence how the festival spectacle is perceived, as is reflected in the well-known habituation process

Table 1: Descriptive statistics.

	Mean	Standard Deviation	Minimum	Maximum
Collective effervescence	10.09	2.85	1	16
Collective effervescence (standardized [†])	0.00	1.00	−3.19	2.08
Focused interaction	0.57	0.50	0	1
Party preference	0.76	0.43	0	1
Male	0.45	0.50	0	1
Age	20.85	3.96	15	38
Age (standardized*)	−0.01	0.49	−0.74	2.13
Prior attendance	2.60	3.09	0	19
Social density	3.50	0.47	2.30	4.19
Social density (standardized*)	0.00	0.49	−1.24	0.72
Centrality	1,362.68	446.46	645.83	2,408.28
Centrality (standardized*)	−0.01	0.49	−0.80	1.15
Spatial lag of collective effervescence	9.29	2.04	4.1	13.3
Spatial lag of collective effervescence (standardized*)	0.00	0.49	−1.24	0.96

Note. $N = 469$, with an average of 9.4 (minimum = 5; maximum = 19) respondents nested across 50 contexts. The ambition was to sample 10 respondents per context. However, some contexts were so sparsely populated that this number could not be achieved in practice. Furthermore, in some contexts, we sampled beyond the desired number of respondents. This may reflect accidental oversampling or that some survey responses obtained in an adjacent context were mistakenly georeferenced. However, overall and given the limited occurrence of these issues, this should be considered a negligible source of bias.

[†] z-standardized; * Standardized by subtracting the mean and dividing by two standard deviations (Gelman 2008).

by which emotional arousal decreases with additional event exposure (Rankin et al. 2009).

The social-morphological factor of social density was captured with spatial network analysis tools—specifically, the “space syntax” method (Hillier and Raford 2010), which was used to create a proxy measurement of the level of movement or crowding density around the georeferenced tent contexts. The procedure involved the following steps. First, a high-resolution aerial photograph of the festival setting was converted into an axial map using the spatial network analysis tool UCL Depthmap (Turner 2004). This map depicts the fewest and longest lines needed to cover all the ways of moving around the layout (Hillier and Hanson 1984). Next, a segment angular choice analysis of the axial map was run. This choice analysis decomposed the axial lines into the segments between junctions and captured the shortest paths between all segments within a given metric radius—that is, the journey with the lowest angular cost for each possible origin and destination pair of segments (Turner 2001). In intuitive terms, a choice measure identifies the bridges that run across the network, representing movement-dense thoroughfares. Note that choice is equivalent to centrality betweenness (Freeman 1977), which is a well-known measure in sociological network analysis.

Choice is important for the current analysis given that this network measure is a very strong predictor of movement densities in large-scale built environments (Hillier and Iida 2005; Sharmin and Kamruzzaman 2018). However, to assess whether choice is a valid proxy for real-life crowding patterns in the study context, the choice measurement was correlated with movement count data, which were collected in parallel with the survey data. Specifically, movement count data were recorded at 70 randomly localized gates, each of which was observed five to six times for three minutes (Griffiths 2014). A Spearman's correlation showed a strong positive association between movement and a local (approximate radius of 400 meters) choice measure ($r_s = 0.74$; $p < 0.01$). As such, choice may be considered a valid proxy of movement or crowding density in this study setting. The social density predictor was calculated by taking the mean choice value of the path segments immediately surrounding each of the 50 locations where the georeferenced surveys were sampled. Note that all continuous independent variables were standardized by subtracting the mean and dividing by two standard deviations so as to make their estimates comparable to binary predictors (Gelman 2008).

As a final morphological predictor, the analysis included a measurement of the spatial *centrality* of the visitors' camp locations, which were captured as the beeline distance from each camp to the central music area. This variable was calculated in the geographic information system software MapInfo using the "place syntax" module (Stähle, Marcus, and Karlström 2005). The basis for including this predictor is that research has long suggested that spatial centrality is a key aspect of built morphologies (Burgess 1925), including emplaced experiences (Snizek, Nielsen, and Skov-Petersen 2013). Finally, note that for transparency, the supplemental material includes all variables (osf.io/eqdgb), both those incorporated in the final analysis and those excluded after inspection.

Estimation

Data have a hierarchical structure, with visitor responses nested in festival locations, which violates the regression assumption of independence of observations (Musca et al. 2011). Multilevel modeling has been developed to correctly estimate such clustered data (Hox, Moerbeek, and van de Schoot 2017). The suitability of this approach was confirmed by calculating an intraclass correlation, which indicated that as much as 50 percent of the variance in the dependent variable is attributable to internally correlated differences between the clusters. Specifically, the article applied a two-level linear regression model with a random intercept, computed using Stata 14's "mixed" module. Note that multilevel models are vulnerable to insufficient sample sizes. However, as suggested by McNeish and Stapleton (2016), as few as 30 contexts, containing an average of five individuals, yield unbiased fixed-effects point estimates in most modeling scenarios. With a mean of 9.4 individual-level records nested across 50 contexts, the data are comfortably within these bounds.

A potential limitation of using multilevel tools for spatial analysis is that the approach only offers a partial solution to the issue of spatial autocorrelation because the model ignores any dependencies between clusters. To assess this issue, a Moran's I statistic was calculated ($I = 0.74$; $p < 0.01$), which suggested that spatially

proximate clusters display a pronounced tendency to have similar levels of collective effervescence. To account for this spatial autocorrelation, the article followed Morenoff's (2003) suggestion to include a *spatial lag of collective effervescence* as a context-level covariate. This spatial lag, calculated using the spatial analysis tool GeoDA (Anselin, Syabri, and Kho 2006), captured the average value of the collective effervescence outcome in the neighboring area.

Finally, while the current article's statistical approach is frequentist in nature, the use of p values is supplemented with Bayes factors that can quantify support for the null over the alternative hypothesis (Dienes 2014). Such assessment of evidence in favor of a non-association is not possible with p values. Further, Bayes factors are more robust in separating genuine effects from false positives (Ruíz-Ruano García and Puga 2018), a feature that is particularly interesting given the exploratory approach of the article, which is prone to inflate the false-positive error rate. Specifically, the article reports Bayes factors approximated from the Bayesian information criterion (Hamaker et al. 2011; Wagenmakers 2007). This approximation is attractive because it is computationally simple and does not require the specification of priors. To evaluate the strength of the Bayes factor evidence, the following commonly used thresholds were applied (Jarosz and Wiley 2014; Jeffreys 1961): no evidence (~ 1), not worth more than a bare mention (< 3 or $> 1/3$), substantial (3 or $1/3$), strong (10 or $1/10$), very strong (30 or $1/30$), and decisive (> 100 or $< 1/100$).

Results

Table 2 presents the estimated results of the exploratory multilevel regression model of collective effervescence. The focused interaction predictor was statistically significant at a 5 percent level, initially indicating that the level of socializing with the neighboring camp is associated with an elevated experience of collective effervescence. The Bayes factor, however, suggested that the evidence supporting this association is not worth more than a bare mention. Further adding to this fragile picture, the predictor displayed some instability across alternative modeling choices (see Steegen et al. [2016] and the supplemental material [osf.io/eqdgb] for examples).

Next, with respect to the compositional predictors, party preference was positively associated with the outcome, with a Bayes factor indicating substantial support for this finding. There was no association between gender and the collective effervescence outcome, with a Bayes factor suggesting that a non-association is approximately 16 times more probable than an association. Age and prior attendance were further found to be marginally statistically significant predictors, but the related Bayes factors offered more evidence for non-associations. Note, however, that these factors were so close to 1 that data overall are insensitive to detect effects or support for the null hypotheses. These reservations are further stressed by the circumstance that we here are assessing this relationship with multiple predictors and tests, inflating the risk of finding false positives by chance. Thus, when conservatively evaluating the compositional predictors with a Bonferroni corrected p

Table 2: Multilevel regression of collective effervescence.

	β (Standard Error)	95% Confidence Interval	p	Bayes Factor for H_0 over H_1
Focused interaction	0.18 (0.07)	0.05 to 0.32	0.009	0.74
Party preference	0.26 (0.08)	0.09 to 0.42	0.002	0.23
Male	-0.05 (0.07)	-0.18 to 0.09	0.476	16.80
Age	0.20 (0.09)	0.02 to 0.37	0.026	1.89
Prior attendance	-0.03 (0.01)	-0.06 to -0.01	0.017	1.30
Social density	0.44 (0.12)	0.20 to 0.68	< 0.001	0.08
Centrality	-0.31 (0.13)	-0.57 to -0.05	0.018	1.59
Spatial lag of collective effervescence	0.83 (0.14)	0.55 to 1.11	< 0.001	< 0.01
Constant	-0.20 (0.11)	-0.41 to 0.02	0.074	—

Note. $N = 469$.

value at $\alpha = 0.005$ (Benjamin et al. 2018; Sedgwick 2012), only party preference may be considered statistically significant.

The social density variable was statistically significant, with larger choice values (indexing high crowding) increasing the likelihood of a higher collective effervescence score. The related Bayes factor offered strong support for this association. By comparison, the spatial centrality predictor was only fragily associated with the outcome, with a Bayes factor indicating data insensitivity in distinguishing the null hypothesis from the alternative.

Finally, the spatial lag of the collective effervescence was positively associated with the study outcome, with a Bayes factor offering very strong support for this association. Adding to this, this estimate clearly had the largest effect size of the included predictors, with a confidence interval suggesting that the collective effervescence outcome approximately increases between one-half and one standard deviation when the spatial lag variable increases by two standard deviations.

Discussion

The aim of the current study was to explore various plausible underpinnings of collective effervescence. Whereas the existing literature mainly highlights the importance of focused interaction, the current study also considered the potential influence of compositional and morphological/environmental factors. The multilevel regression analysis indicates that focused interaction has only a fragile

positive association with the collective effervescence outcome. However, it should be noted that the direction of the estimated effect is what should be expected from the existing body of evidence, suggesting that focused interactions promote positive collective emotions (Heider and Warner 2010; Rossner 2011; Thye et al. 2014; Wellman, Corcoran, and Stockly-Meyerdirk 2014).

The analysis further indicates that compositional properties play some role in shaping the collective effervescence phenomenon. This is most convincingly evidenced by the finding that a high level of party preference has a moderately robust association with collective effervescence. By comparison, gender was not associated with collective effervescence, and data were insensitive to establish whether age and prior attendance are associated with the outcome or not. Taken together, these findings support the view, appreciated by Collins's (2004) IR theory, that compositional features should not be rejected when accounting for collective effervescence and micro-social processes. More broadly, this argument aligns with the growing insight that micro-sociology (Smith 2015) and social psychology (Swann and Jetten 2017) have overemphasized the "power of the situation" at the expense of person-based influences and person-situation interactions (Fleeson and Noffle 2008).

Finally, the analysis supports the relationship between social-morphological densities and emotional excitement. This finding highlights that collective effervescence is not merely promoted by focused interaction processes, as the Durkheimian tradition often assumes; also, and sometimes to a greater extent, collective effervescence may be associated with unfocused interaction dynamics unfolding within a crowd of people. On this point, Collins's IR theory is a rare attempt to theorize such a micro-morphological underpinning of collective effervescence: "Being in a crowd gives some sense of being 'where the action is,' even if you personally are not part of any well-defined action" (Collins 2004:82). By linking social densities with positive emotions, Collins and the current study pose a counterweight to the influential assumption that high densities promote adverse social outcomes, including negatively valenced emotions (Boyko and Cooper 2011). As such, the findings of this study align with Freedman's (1975:105) suggestion that "[c]rowding is not generally negative and it does intensify reactions to other people."

The above morphological considerations, moreover, pave the way for the more far-reaching suggestion that architectural space holds a "real agency" (Hillier 2005); this may concentrate movement flows in spatially integrated places and thus, in turn, facilitate the excited feeling of being in a crowd (Liebst 2015, 2016). That such an emotional dynamic may be shaped by the spatial network itself, independently from other social-morphological features (Ratti 2004), is further substantiated by the finding that spatial centrality was not robustly associated with collective effervescence.

The above interpretations diverge from the mainstream Durkheimian perspective, also shared by Collins (1983:187), that "time, space, and numbers do not *do* anything; all real causal forces must come from human beings acting in some situation." As such, the agency of morphological space indicated in the current article counters the criticism that a Durkheimian approach is irreconcilable with an understanding of non-human agency (Latour 1996). This position also invites

Durkheimian scholars to revisit the often neglected attempts to theorize morphological agency within the tradition (Hillier et al. 1987; Liebst 2016; Lindemann 2011; Mauss 1979).

The spatial lag of the collective effervescence outcome was found to be robustly and strongly associated with collective effervescence. This finding suggests that collective effervescence, similar to other social phenomena (Logan 2012; Weisburd 2015), displays a pronounced spatial clustering tendency, an observation that is also supported by the very large intraclass correlation reported above. Moreover, spatial lags are often interpreted as suggesting some “spillover effect” between places (Anselin 2002). As such, the spatial lag in the current model may indicate that adjacent locations affect one another’s excitement levels and that such sociospatial influences further intensify the hot spots of collective effervescence.

Besides being relevant for Durkheimian research, the approach and results of the current study are also informative for the field of festival-event studies. In a review of this field of study, Getz (2010:20) stresses that an adequate understanding of festival experiences should be rooted in the sociological and anthropological disciplines, yet there is “little evidence in the research literature (and in the pertinent textbooks) that the connections are being made.” The current study addresses this concern by offering a sociological Durkheimian understanding of the sources of emotionally effervescent festival experiences. Thus, besides adding to the growing knowledge that festival experiences are clustered in hot spots (Pettersson and Getz 2009) and are positively associated with event crowding (Kim, Lee, and Sirgy 2016), the current study also provides a social-morphological framework in which to interpret these findings.

The present study has limitations that warrant discussion. Although a distinction between interactional, compositional, and morphological influences may be theoretically helpful, these factors often overlap and are hard to disentangle in practice (Manski 1993). Regarding this concern, it is known that multilevel model assessments of context effects, such as the morphological density factor in the current study, cannot be fully separated from the compositional effects of self-selection (Oakes 2004). Hence, it is plausible that a proportion of the relatively large social density effect may in fact be attributed to unmeasured compositional effects. Similarly, it is likely that the direct crowding–experience relationship assumed in the current article is confounded by the individuals’ perceptual expectation that some places and social activities are more exciting than others (Goffman 1974; Sampson and Raudenbush 2004).

Another limitation concerns the reliance on survey self-reports in the operationalization of the collective effervescence outcome and, most problematically, the study subjects’ behavioral engagement in focused interactions. First, like other emotional phenomena, collective effervescence may be expected to have physiological, behavioral, and experiential dimensions (de Gelder 2009; Mauss and Robinson 2009; Xygalatas et al. 2011); yet, it is only the latter dimension that is captured by the included self-reported measure. Second, by measuring interactional behavior with survey self-reports, the current study makes itself vulnerable to the critique that human behavior should ideally be observed directly, given that self-reported accounts are notorious for providing an unreliable picture of how people actually

behave (Baumeister, Vohs, and Funder 2007; Reiss 1991). The inclusion of an indirect and therefore noisy measurement of focused interaction may, in part, explain the fragile association between this factor and collective effervescence.

Finally, the limitations of the article's exploratory approach are highlighted. Although exploratory data analysis is a valuable and legitimate approach if disclosed (Tukey 1980; Wicherts et al. 2016), it should be acknowledged that it inflates the risk of reporting false positives (Forstmeier, Wagenmakers, and Parker 2017). Conservatively interpreted Bayes factors were reported in parallel to p values as a countermeasure to this issue. Bayes factors are still atypical within sociological research, and I hope the current study will serve as an illustration of the relevance of reporting Bayes factors as a means of moving beyond the binary view of statistical inferences promoted by p values (Cumming 2014). However, regardless of this Bayesian approach, strictly confirmatory research is needed to assess the robustness of the correlates of collective effervescence identified in this study.

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